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VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION

ST. CROIX, VIRGIN ISLANDS, U. S. A.

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REPORT OF THE VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION

1923

Issued July, 1924

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1924

VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION, ST. CROIX

[Under the supervision of the Office of Experiment Stations, United States Department of Agriculture]

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[1] Resigned Aug. 31, 1922. [2] Appointed May 7, 1923.

VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION
ST. CROIX, VIRGIN ISLANDS, U. S. A.

Under the supervision of the
UNITED STATES DEPARTMENT OF AGRICULTURE

Washington, D. C. July, 1924

REPORT OF THE VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION, 1923

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REPORT OF THE AGRONOMIST IN CHARGE

By J. B. Thompson

During the fiscal year 1923, agriculture in the Virgin Islands failed to enjoy even a normal degree of prosperity. Unsatisfactory prices paid for beef animals and a general shortage of feed, due to abnormally light rainfall, militated in many instances against the profitable pursuit of the cattle industry; the cultivation of Sea Island cotton, temporarily abandoned in 1921, was not resumed to the same extent as formerly, owing to the low price paid for cotton lint; and the yield of sugar cane was unfortunately very light at a time when the market was unusually satisfactory. Labor strikes on the plantations in the fall of 1921 and continued drought resulted in a reduction in the area usually devoted to plant cane, with a proportional increase in the amount of less productive ratoon cane that entered into the season's harvest.

In the division of agronomy, propagation work with cane seedlings was considerably hampered by unfavorable weather conditions, and experimental work with field crops was restricted to a small scale.

In the horticultural division, new fruits and rare and economic plants were introduced. Experimental and demonstrational work with vegetables was continued, and seeds and plants were distributed to encourage the general trial of the more successful varieties of vegetables grown by the station.

Milk records were kept of the station cows completing one full lactation period.

STATION IMPROVEMENTS

A well was dug to a depth of 60 feet to help supply water for the use of the station. Only a light seepage vein was encountered at a depth of 50 feet, and the flow was not increased by digging another 10 feet. Water at the rate of only 30 gallons per day was obtained. This quantity was wholly inadequate to meet the needs of the station, and eaves troughs were therefore placed on two buildings to increase the total catchment area by about 3,000 square feet. Such an addition should help to increase the annual water supply very materially, since the total area would collect 54,000 gallons of rain in a year as dry as that of 1922–23. A cistern, having a concrete cover to insure good, clean water and prevent evaporation and a capacity of 20,000 gallons, was completed to receive the flow from these troughs. Surplus water will be carried by pipes to reservoirs in the lower yard. A frame and galvanized corrugated iron catchment basin, having an area of 10,000 square feet, was built on an elevation some 50 feet above the location of the office building. This area should provide 180,000 gallons of water during years in which the rainfall is as scant as it was in 1922–23. A reservoir, having a capacity of 65,000 gallons, will be constructed early in the coming year to receive the flow from this roof. The water will be carried by gravity from the large cistern contemplated through connecting pipes to reservoirs in the lower yard and to limited areas to facilitate plant breeding and propagation work.

The propagation house was remodeled, for handling the ever-increasing volume of propagation and breeding work. Benches were arranged to hold flats and potted plants, platforms were built around the sides for plants in tubs, and a small car track was laid in the center of the house to permit of plants and other material being conveyed from the house to the nursery.

Among other improvements was the clearing of 40 acres of hilly land that had become overrun with a dense brush which tended to suppress the growth of Guinea grass and render the land of little value for agricultural purposes.

Twenty acres of tillable land were planted with Guinea grass and produced large quantities of nutritious forage, which proved of value during the last dry months of the year.

AGRONOMIC INVESTIGATIONS

CORN-IMPROVEMENT WORK

Crosses between a native yellow and Black Mexican sweet corn continued to be made in the hope of developing a variety combining good table qualities with resistance to the corn earworm (*Heliothis obsoleta*). As a result of an unfavorable season, the yields were light and the ears undersized. The type, however, showed noticeable improvement over that of the preceding generation. Portions of five selected ears, taken from the preceding crop and planted in an area 36 by 50 feet, were used as the seed. Roguing was practiced before the tassels appeared, to eliminate the possibility of cross-pollination from weak and otherwise undesirable plants. Further

crosses will be made between a recently introduced lot of seed of the Black Mexican variety and the original cross.

Work with Guam white corn was temporarily abandoned. The strain became badly mixed after several generations of the corn were grown, and it is less resistant to the corn earworm and less productive than is the native yellow crossed with Black Mexican sweet corn.

SEEDLING CANES

As a result of unfavorable weather conditions and an inadequate water supply, less than 100 cane seedlings of the approximately 300 grown in 1922 were living at the close of the fiscal year. A few new seedlings, grown from arrows taken from cane S. C. 12/4 are, however, thriving at the present time (June 30, 1923).

SWEET POTATO WORK

An experiment was conducted during the year to determine the effect of manure on yield of sweet potatoes. The varieties, Black Rock, Bigwig, and Key West Yam, were planted on unfertilized plats and on similar areas to which manure at the rate of 20 tons per acre had been applied. Each plat was 600 square feet in area. The land was plowed and the manure applied under the banks or ridges in April. The vine cuttings were planted September 27. The yields are shown in the following table:

Comparison in yield of sweet potatoes grown on fertilized and unfertilized plats

Variety	Yield per plat		Estimated yield per acre	
	Manured	Not manured	Manured	Not manured
	Pounds	*Pounds*	*Pounds*	*Pounds*
Black Rock	189½	198	13,757	14,374
Bigwig	139½	148	10,127	10,744
Key West Yam	177½	108½	12,886	7,877

The above table shows that the Black Rock and Bigwig varieties made a slightly better yield on the unmanured plats, but that the Key West Yam produced its maximum yield on the plat to which fertilizer had been applied. Considering the planting as a whole, the increase in yield, due to the application of manure, was approximately 10 per cent. Owing to unfavorable weather conditions, it is likely that the crop did not get the maximum benefit from the manure applied. The experiment will be continued during the coming year in order to learn whether improvement in productivity of the soil is shown by the second crop.

The work of developing new seedling varieties of sweet potatoes was continued. Some 250 seedling varieties were grown to maturity. Of these, 100 were grown in a comparative test and checked against their parent varieties. (Pl. I, fig. 1.) Each seedling occupied one-eightieth of an acre. The results are encouraging, since the seedlings are making heavier yields than did their parents.

ALFALFA

Plantings of Hairy Peruvian and common alfalfa, made for purposes of comparison, failed to become established due to dry weather setting in immediately following seeding. St. Croix soils in general do not seem to be well suited to the growing of alfalfa. The few plants that have persisted for four years and continue to make vigorous growth are being watched with interest.

LEGUMINOUS CROPS

Cowpeas.—Twenty-one varieties of cowpeas were grown for purposes of comparison in a test duplicating work of the preceding year. (Pl. I, fig. 2.) The crop occupied a considerably larger area than did that of 1922, but made less satisfactory yields, due to unfavorable growing conditions.

Velvet beans.—Small plantings of 40 different lots of velvet beans, obtained from various parts of the world by the Office of Forage Crop Investigations, United States Department of Agriculture, were planted December 16, 1922. None made very satisfactory growth. The age of the seed ranged from 1 to 12 years, and many of the older lots showed low vitality or failed to germinate. Data were collected on the relative germinating power of the seeds.

Mungo beans.—Seed of mungo beans (*Phaseolus aureus*), planted in a small area, gave unsatisfactory results. Further plantings, however, will be made later when it is hoped that conditions will be favorable. Undoubtedly this species, like most of the other newly introduced legumes, will need seed or soil inoculation to enable it to make the proper growth.

BOTANICAL COLLECTION

During the year more than 100 specimens of the flora of the Virgin Islands were collected, including types and varieties of cultivated plants. General information relating to the different species and their uses locally will be recorded from time to time for the benefit of members of the station staff. This arrangement will give the station possession of a valuable herbarium collection of the plants peculiar to the islands.

NOTES ON THE STATION HERD

As was explained in the previous report,[1] the cattle belonging to the station are typical of those in the Virgin Islands, and are being handled very much the same as is the native stock. One aged bull died during the year, and one bull calf was stillborn. The increase by birth numbered 9 calves. Nineteen calves (10 heifers and 9 bulls) were dropped by the herd during the fiscal years 1922 and 1923. The birth weights of the 15 calves for which records are available averaged 55.4 pounds. The heaviest calf, a bull weighing 74 pounds, and the lightest calf, a heifer weighing 38 pounds, were out of 3-year-old heifers. The Holstein bull, introduced three

[1] Virgin Islands Sta. Rpt. 1922, p. 10.

FIG. 1.—SEEDLING SWEET POTATOES. PLATS ONE-EIGHTIETH ACRE

FIG. 2.—COMPARATIVE TEST OF VARIETIES OF COWPEAS

years ago from St. Kitts, was placed in service during the year. Milk records were kept of cows completing a full lactation period. These cows received no feed other than pasturage, and in most cases were allowed to run with their calves during the day, being milked only in the morning. The following table gives their milk record:

Milk yields of station cows during one lactation period

Month	Name and yield of cow							
	Agnes [1]	Mongoose [2]	Maud [2]	Queen [2]	Judy [1]	Bella [2]	Helen [2]	Beauty [2]
	Pounds 1922	*Pounds* 1922	*Pounds* 1922	*Pounds* 1922	*Pounds* 1922	*Pounds* 1923	*Pounds* 1923	*Pounds* 1923
January	285	289	222	130	80	84	128	206
						1922		
February	236	221	148	130	214	144	81	141
March	208	202	134	116	181	141	28	50
April	157	205	119	113	100	98	----------	----------
							1922	1922
May	95	151	103	99	22	107	112	101
June	85	149	111	80	----------	138	242	361
July	----------	138	151	100	----------	144	239	344
August	----------	17	135	85	----------	134	211	262
September	----------	----------	121	80	----------	102	213	237
October	----------	----------	159	97	----------	135	278	299
	1921							
November	188	----------	139	37	----------	103	230	246
		1921						
December	297	293	148	----------	----------	95	195	243
Total	1,551	1,665	1,691	1,067	597	1,425	1,956	2,490
Days	228	259	353	324	120	365	319	312

[1] Calf hand fed and cow milked twice daily.
[2] Calf allowed to follow cow, which was milked only in the mornings.

From the above table it will be seen that the cows of this herd were in milk during an average period of 285 days, and that during that time they produced on the average 1,556 pounds of milk.

WEATHER OBSERVATIONS

The progress of field work at the station, as well as the success of general farming in most sections of the Virgin Islands, depends very largely upon the annual amount and distribution of rainfall. The air is comparatively dry and the soil moisture is rapidly evaporated by brisk and almost constantly blowing trade winds. Rainfall is practically the only source of water available for plant growth in the islands. What might be considered an adequate rainfall for the growing of farm crops in other parts of the world would not be sufficient for growing purposes here. The year 1923 is the fourth successive year of a drought that has steadily increased in severity. The very serious nature of this drought may be somewhat realized when it is stated that the total rainfall for the past year was only 28.79 inches, the lowest in 70 years, while evaporation from a water surface amounted to 79.63 inches. The following table compares the monthly rainfall of the period 1919–1923, with the

average monthly rainfall for the island, calculated from records covering the 60-year period, 1852–1911:

Comparison of the monthly rainfall for 1919–1923 with the normal

Month	Year ended June 30—					Average from 1852 to 1911, inclusive
	1919	1920	1921	1922	1923	
	Inches	*Inches*	*Inches*	*Inches*	*Inches*	*Inches*
July	3.57	8.82	2.91	5.39	1.69	3.65
August	1.15	2.10	1.71	1.24	2.75	4.70
September	3.58	7.17	4.71	4.49	5.61	6.07
October	8.21	2.05	9.54	4.67	3.31	6.56
November	10.33	4.32	4.38	1.76	1.65	5.23
December	1.86	4.51	3.17	3.36	3.87	3.53
January	2.74	2.73	3.23	2.99	1.77	2.38
February	1.76	3.21	.96	3.12	1.57	1.91
March	1.64	1.86	3.55	2.32	2.07	1.70
April	19.44	.05	1.35	.68	1.56	2.60
May	2.19	.41	2.81	.74	.36	4.47
June	3.16	1.15	.96	2.85	2.58	4.01
Total	59.63	38.38	39.28	33.61	28.79	46.81

The rate of evaporation, which has an important bearing upon moisture conservation, is exceedingly high in St. Croix. The following table summarizes the results of monthly evaporation observations made at the station during the past three years with instruments supplied by the United States Weather Bureau:

Monthly evaporation at the station, 1921–1923

Month	Year ended June 30—			Average for the three-year period
	1921	1922	1923	
	Inches	*Inches*	*Inches*	*Inches*
July	7.85	7.29	8.02	7.72
August	7.19	7.17	8.43	7.59
September	5.33	5.64	6.68	5.88
October	5.65	5.08	5.53	5.42
November	3.96	5.07	4.89	4.64
December	4.47	3.61	4.40	4.16
January	4.37	4.26	5.19	4.61
February	5.16	4.55	5.59	5.10
March	7.06	6.02	7.59	6.89
April	6.56	7.90	6.59	7.02
May	7.45	9.25	9.33	8.68
June	7.99	7.87	7.40	7.75
Total	73.04	73.71	79.63	75.46

An increase in evaporation during periods of low atmospheric humidity is shown in a general way in the seasonal periods of light rainfall within the year. The greatest loss of moisture through evaporation occurs within the six-months' period from March to August, coincident with the season of lightest rainfall. This relation between low precipitation and rapid evaporation is graphically shown in Figure 1.

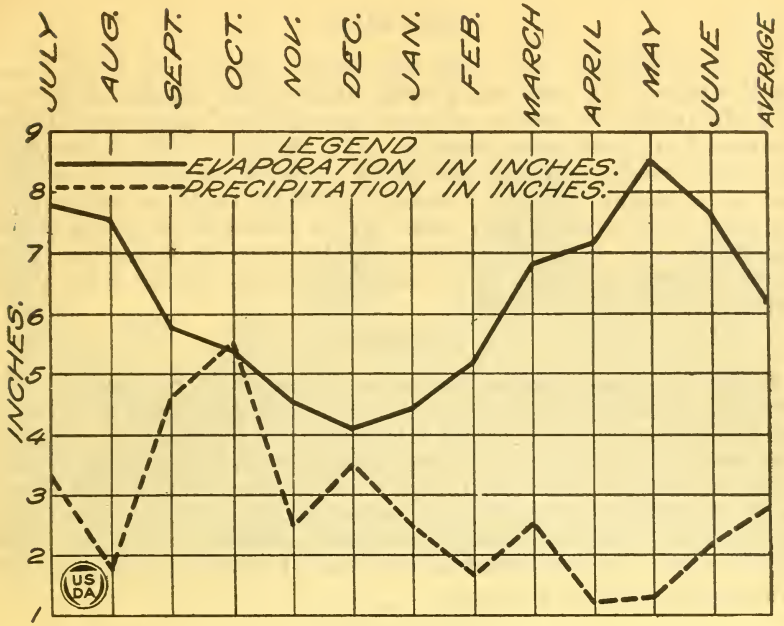

FIG. 1.—Mean monthly precipitation and evaporation in St. Croix, 1921–23.

REPORT OF THE HORTICULTURIST

By W. M. PERRY

EXPERIMENTS WITH TRUCK CROPS

Experiments with truck crops from November to March, although conducted under less propitious weather conditions than in 1922, gave encouraging results. A fall of more than average amount of rain during the early part of the period tended to promote good root development, which enabled many of the vegetables to withstand the dry weather occurring later. The temperature is relatively low from November to March, and evaporation is less rapid than at other times. Caterpillars appearing during September, October, and early November do much damage to vegetable plantings, and are frequently responsible for crop failure at times when other conditions are favorable.

STRING BEANS

The varieties Kentucky Wonder and Kentucky Wonder Wax, grown on an area totaling 6,300 square feet, yielded 1,064 pounds of snap beans, which was at the rate of 7,352 pounds per acre. When planted at the same time and under similar conditions, Kentucky Wonder made approximately 15 per cent greater yield than did Kentucky Wonder Wax. When planted at distances of 18 by 24 inches, Kentucky Wonder produced 38 per cent more than the same variety planted 24 by 36 inches apart.

LIMA BEANS

In a comparative test with four other varieties of Lima beans, begun October 12, 1922, the Florida Butter bean yielded at the rate of 1,079 pounds of green pods and in addition approximately 509 pounds of dry shell beans per acre. (Pl. II, fig. 1.) The other varieties were attacked by the cane borer (*Diaprepes abbreviatus*) and had to be abandoned. In a second planting, made to compare the yields of the Florida Butter bean and the Small White Lima (Carolina Sieva), the former produced slightly more than did the latter. There is some objection to the mottled Florida Butter bean which turns dark on being cooked.

CARROTS

Eight different varieties of carrots, planted in September, 1922, were destroyed by webworms. A second planting on November 18 made satisfactory growth and fair yields notwithstanding unfavorable weather conditions. The outstanding varieties in point of yield were Maule's Danvers Half Long (planted on an area of 1,890 square feet), Half Long Stump-Rooted Nantes (planted on an area of 1,530 square feet), and San Jose Champion (planted on an area 1,080 square feet), which yielded at the rate of 10,465, 9,234, and 9,067 pounds, respectively, per acre.

EGGPLANT

Eggplant was grown with success, and was not affected by wilt as was the case in 1922. Improved Purple Thornless and Black Beauty, which were similar in character of fruit and habit of growth, were of high quality and gave entire satisfaction. The variety known as Excelsior, whose fruit is more oblong in form and of a more broken color than is true of the other varieties named above, developed such bitterness during the dry season as to render it unfit for table use.

OKRA

Planted September 1, 1922, on adjoining plats of equal size, Perkins' Mammoth Long, Dwarf Prolific, and Kleckley's Favorite began bearing the latter part of October, and continued to do so until the middle of March. Dwarf Prolific (Density) and Kleckley's Favorite, grown for the first time at the station, yielded 556 and 520 pounds, respectively, per plat. Perkins' Mammoth Long, which has been more extensively planted at the station than perhaps any other variety, yielded 413 pounds per plat. Dwarf Prolific is a little later than Perkins' Mammoth Long in coming into bearing, and its pods are shorter, stouter, and angular. Kleckley's Favorite begins to bear one to two weeks later than Perkins' Mammoth Long, and its pods, while similar in form to those of the latter, are less angular and of lighter color. When young, the plats of Kleckley's Favorite bear a profusion of large, strikingly ornamental green leaves which tend to shade the ground and conserve soil moisture, but render picking difficult.

The varieties Perkins' Mammoth Long, White Velvet, and Bramba, a local sort, were grown in a dry weather planting made Decem-

FIG. 1.—FLORIDA BUTTER BEANS, DECEMBER 25, 1922. PLANTED OCTOBER 22, 1922

FIG. 2.—RADISHES, DECEMBER 24, 1922. PLANTED NOVEMBER 12, 1922. CARROTS IN BACKGROUND

ber 12, 1922. Of the three varieties, White Velvet had the highest drought-resistant qualities. The total yield was at the rate of 106,274 pods per acre, which was equivalent to 1,683 pounds per acre. Bramba yielded 36,637 pods per acre, or at the rate of 448 pounds per acre.

PEAS

Garden peas were grown with good results. The varieties Florida McNeil and John L made an average production in two plantings of 1,646 and 829.5 pounds, respectively, per acre. The John L was much earlier than the Florida McNeil and surpassed the latter in quality. It is concluded from the experiment that the garden pea can be successfully grown in the Virgin Islands during the cooler months of the year.

RADISHES

The varieties Cincinnati Market, Long Cardinal, White Strasburg, White Icicle, and Long White Japanese were planted November 12, 1922. (Pl. II, fig. 2.) All made satisfactory yields except Long White Japanese, which is a winter sort and not suited to local conditions. Of the five varieties, White Icicle and Cincinnati Market gave the best results. Long Cardinal developed in the shortest period of time, but soon lost its crispness and became pungent and unfit for use. White Strasburg was of good quality. Close planting can not well be practiced with this variety because of its vigorous top growth, and, unfortunately, distant planting reduces yield. This, however, is not a serious objection when the variety is planted for home use. Cincinnati Market, the heaviest producing variety of the lot planted, yielded 494½ dozen good, crisp radishes from an area of 1,100 square feet.

TURNIPS

Turnips were larger and produced heavier yields than those grown last year. Extra Early Purple Top Milan, planted November 18, 1922, yielded from an area of 1,125 square feet, a crop of 265 pounds. Many of the turnips were 3½ to 4 inches in diameter, and some developed a bitter taste which was considerably lessened when the vegetable was cooked. Having been planted early in the year, this short-season variety had practically completed growth before it was attacked by the diamond-back moth.

OTHER VEGETABLES

Two varieties of beets, Lenz Extra Early Turnip, and Dark Red Egyptian, were planted December 5, 1922, but were attacked by webworms.

Planted November 18, 1922, the varieties of mustard, New Chinese (No. 229), Large Elephant Ear (No. 316), Fordhook Fancy (No. 317), and Giant Southern Curled (No. 228), made remarkably rapid and vigorous growth, and yielded at the rate of 29,548, 17,139, 15,303, and 15,196 pounds, respectively, per acre.

Plantings of 13 varieties of peppers made good growth.

Swiss chard grew vigorously, but was ruined by webworms. Parsley grew to perfection and yielded exceptionally well.

Three varieties of endive were grown. This vegetable thrives better in hot weather than does lettuce, is less susceptible to attack by caterpillars, and remains crisp and edible for a much longer period before running to seed.

Celery seedlings, planted in partly shaded boxes December 8, 1922, and set in the field upon the approach of cool weather, did not do well on account of insufficient rainfall.

Rutabagas, planted November 18, were failures.

Six varieties of cabbage withstood the dry weather splendidly, and produced heads averaging 1 pound each.

The large purple-fruited husk tomato (*Physalis* sp.), introduced during the year, bore fruits measuring 1 to 1½ inches in diameter. Other varieties yielded heavy crops, but produced fruit of inferior quality.

New Zealand spinach was again grown with satisfactory results. This variety when cooked has an astringency that becomes rather pronounced with the advance of the hot season.

SEED AND PLANT DISTRIBUTION

Vegetable growing in the Virgin Islands is often unsuccessful due to difficulty in obtaining fresh, viable seed, failure in selecting suitable varieties, and a general tendency to await the advent of wet weather before planting even such vegetable seeds as require seed-box propagation. In an effort to encourage and promote diversified planting and bring success to the planter, the station distributed seeds and vegetable plants of selected varieties at what was considered the best time for planting. The growing interest in garden work was shown by the large number of people requesting planting material, as many as 30 persons coming to the station on days following rain. Some of the more important vegetables distributed included Bermuda onions (35,028 plants), thyme (48 plants), tomatoes (7,389 plants), eggplant (2,075 plants), cabbage (1,725 plants), peppers (1,369 plants), and parsley (481 plants). Owing to unfavorable weather conditions, results from these distributions were not all that could be desired. There was, however, a more plentiful supply than usual of tomatoes and carrots on the local markets, and this increase no doubt was due to the seed and plant distribution by the station.

INTRODUCTION OF ECONOMIC PLANTS

A number of new plants, which it is hoped will prove of economic value in the Virgin Islands, were introduced during the year through the Office of Foreign Seed and Plant Introduction, United States Department of Agriculture, and various other sources. Seed of the cherimoya (*Annona cherimola*), sandalwood (*Santalum album*), Chinese hibiscus (*Hibiscus rosa sinensis*), *Bauhinia grandiflora*, *B. racemosa*, and divi-divi (*Cæsalpinia coriaria*), obtained through a French seed house, and seedlings of *Sterculia diversifolia* from California seed, were successfully started.

Introductions from the Office of Seed and Plant Introduction included the wood-oil nut (*Aleurites fordii*), jack fruit (*Artocarpus integra*, S. P. I. No. 54654), *Diospyros mollis* (S. P. I. No. 52510), an avocado of the Mexican type (*Persea schiediana*, S. P. I. No.

44682), the Macadamia or Queensland nut (*Macadamia ternifolia*), the lucuma (*Lucuma obovata*, S. P. I. No. 54653) of northern Chili and Peru, the ilama (*Annona diversifolia*, S. P. I. 52404) from western Mexico, and the Chinese pistachio nut (*Pistachia chinensis*). Palm seed varieties introduced and started include *Rhopalostylis baurea*, *Arenga saccharifera*, *Chamærops humilis*, *Caryota mitis*, *C. urens*, *Phœnix canariensis*, *P. dactylifera*, hybrids of *P. canariensis* crossed with *P. dactylifera*, *Washingtonia filifera* and *W. robusta*. A Western African palm (*Elœis guineensis*, S. P. I. No. 51017), from which the valuable palm oil is obtained, was received and successfully established.

Plants were produced from seed of *Jacaranda ovalifolia* from California and from seed of the same species received from France under the name *J. mimosæfolia*. *Eucalyptus ficifolia*, *E. corymbosa*, *E. citriodora*, *E. polyanthemos*, *E. globulus*, *E. robusta*, *E. corynocalyx*, *E. rostrata*, *E. marginata*, *E. longifolia*, *E. collosea*, and *E. tereticornis*, were introduced and planted to test their value as windbreaks. The most promising species appear to be *E. rostrata*, *E. robusta*, and *E. tereticornis*. Other species introduced for trial as windbreaks included *Casuarina stricta*, *C. torulosa*, *C. cunninghamiana*, *C. glauca*, *C. suberosa*, and *E. quadrivalvis*. The last named is probably the same as *C. stricta*, although in behavior it is distinctly different. *C. stricta*, the seed of which was obtained from southern California, and *C. glauca*, purchased from a company in France, are the only species of promise so far.

Varieties of figs introduced included the Brown Turkey, Brunswick, Green Ischia, Celeste, and Lemon. Seed of the roselle (*Hibiscus sabdariffa*) was obtained from California and planted October 25, 1922. The resulting plants attained a height of 8 to 12 inches, bore flowers, and forthwith died. Consideration is being given the planting of a second lot of roselle seed during the period of maximum daylight. Three different kinds of guava (*Psidium* sp.) plants were grown from seed obtained from France. The camphor tree also was introduced and planted.

GRAPES

That grapes are at home in the Virgin Islands is indicated by the numerous individual vines found growing both in St. Croix and St. Thomas. Although these grapes are not of superior quality, they make such excellent growth and yields as to warrant the introduction and planting of improved sorts for experimental purposes. Varieties that are adapted to limy soils were introduced for planting at the station where the soil is underlain to a depth of about 18 inches by a white, chalky marl. Plants of the Munson varieties, bred from *Vitis champinii* of southwest Texas, and other varieties which grow well in the South, were introduced for trial. These included Lomanto, Ladano, Nitodal, Salamander, Lukfata, Valhallah, Armalaga, Carman, Muench, Champanel, as well as the rotundifolia varieties and hybrids, Scuppernong, James, and Sanrubra. The male muscadine plants necessary for the pollination of these latter named varieties were also obtained and planted. Fully 50 per cent of the vines died as the result of drought, but

the others are making good growth. The varieties now under test will be supplemented by some commercial varieties from California.

PINEAPPLES

An experiment with pineapples was started on a small scale. Slips of the variety known in St. Thomas as Bullhead were obtained from that island and planted. (Pl. III, fig. 1.) This variety has a very fine flavor and a thick skin which should enable it to withstand shipping. Two plants of Chocoana pineapple plants (*Ananas sativas*) received March 23, 1923, from the Office of Foreign Seed and Plant Introduction, United States Department of Agriculture, under the S. P. I. No. 54663, are making such remarkable growth as to indicate the adaptability of this variety to island conditions. Plantation owners from the three islands are planning to cooperate with the station in conducting demonstration plats to determine the possibility of pineapple culture in the islands.

ARBORETUM

A part of field 3 was platted for the beginning of an arboretum, where the behavior of introduced trees and shrubs, grown singly and in groups, can be observed. The arboretum is directly east of the vegetable plats and will serve as a windbreak for the garden. A temporary windbreak of elephant grass has already been established (Pl. III, fig. 2). Included among the plantings are timber trees, lawn and roadside trees, fruit and nut trees, and rubber, dyewood, and other economic plants.

REFORESTING.

A large quantity of seed of mahogany (*Swietenia mahogani*) was planted on a strip of hilly land comprising the northern part of the station farm. Mahogany is at home in the Virgin Islands, but nearly all the trees of merchantable size have been felled. Since large mahogany plants are quickly grown from seed and withstand transplanting well, it is thought that a demonstration in reforesting with mahogany will prove of interest to plantation owners on the islands.

ORCHARD WORK

One of the greatest needs of the Virgin Islands is the growing of enough fruit for local consumption. In order to determine the varieties best suited to local conditions, proper methods of culture, and means of controlling plant diseases and insect pests, the station started an orchard in which citrus and other tropical and subtropical fruit will be grown. A dozen trees each of oranges (*Citrus sinensis*) and grapefruit (*C. grandis*), imported in June, are doing well. Plantings have also been made of the avocado (*Persea americana*) and figs (*Ficus carica*).

FIG. 1.—NATIVE OR BULLHEAD PINEAPPLE

FIG. 2.—TEMPORARY WINDBREAK OF ELEPHANT GRASS (PENNISETUM PURPUREUM)

INSECT CONTROL

The control of insects is a serious problem for those engaged in agriculture in the Tropics. Due to the prolonged period of drought, the insects were more numerous than usual. Caterpillars of the southern cabbage butterfly (*Pontia monuste*), and the larvæ of the diamond-back moth (*Plutella maculipennis*) severely attacked mustard, turnips, cabbage, kohl-rabi, and radishes. The southern cabbage butterfly was very effectively controlled by arsenical sprays on turnips, radishes, and mustard. A finely prepared commercial dust spray containing 30 per cent of arsenic oxid, less than three-fourths of one per cent of which was claimed to be soluble in water, was used for the purpose. The preparation was thoroughly mixed with finely powdered lime and sulphur in the proportions of 1.5 parts commercial preparation of arsenic, 1.5 parts of lime, and 7 parts of finely ground sulphur. The mixture was applied by dusting through a fine mesh sack, and later through sifters that were made for the purpose. Since they appeared in great numbers about the time some of the crops were ready for harvesting, the larvæ of the diamond-back moth could not well be brought under control by the use of arsenicals on these plants.

The West Indian sugar-cane root-borer (*Diaprepes abbreviatus*) seriously damaged all varieties of beans and okra. Picking the borers by hand gave the most satisfactory control. The Hawaiian beet webworm (*Zinckenia fascialis*) continually attacked beets, carrots, and Swiss chard, but were brought under control by powdered arsenate of lead and air-slaked lime in equal parts.

The station papaya trees became heavily infested with the West Indian or white peach scale (*Aulocaspis pentagona*), and were cleansed by the use of fish-oil soap and water (1 pound of the soap to 5 gallons of the water).

WORK IN ST. THOMAS

In cooperation with the educational department, the station is conducting horticultural work in St. Thomas which is attracting considerable attention. The demonstration plat at Mosquito Bay, situated along the principal roadway leading westward from the town of St. Thomas, attracts visitors, who request information relative to vegetable growing. Many of those who formerly made their living by handling freight and coaling steamers are now turning their attention to agriculture. The people request seeds and plants and instructions in crop growing. The station, working through its supervisor in St. Thomas, is rendering every possible assistance to those seeking help.

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